# 

## (11) **EP 2 336 718 A3**

(12)

### **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3: 03.06.2015 Bulletin 2015/23

(51) Int Cl.: **G01C** 19/72 (2006.01)

H04B 15/02 (2006.01)

(43) Date of publication A2: **22.06.2011 Bulletin 2011/25** 

(21) Application number: 10176685.5

(22) Date of filing: 14.09.2010

(84) Designated Contracting States:

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR Designated Extension States:

BA ME RS

(30) Priority: 17.12.2009 US 640931

(71) Applicant: Honeywell International Inc.
Morristown, NJ 07960 (US)

(72) Inventors:

Keith, Gregory W.
 Morristown, NJ 07962-2245 (US)

- Mead, Derek Morristown, NJ 07962-2245 (US)
- Smith, Douglas E.
   Morristown, NJ 07962-2245 (US)
- Tarleton, Norman Gerard Morristown, NJ 07962-2245 (US)
- (74) Representative: Houghton, Mark Phillip et al Patent Outsourcing Limited
   1 King Street
   Bakewell, Derbyshire DE45 1DZ (GB)
- (54) System to reduce gyroscopic errors with limited power supply quality in a fiber optic gyroscope

(57) A fiber optic gyroscope includes a light source, an optical coupler in optical communication with the light source, with the optical coupler configured to receive an optical signal from the light source, an optical modulator in optical communication with the optical coupler, and a fiber optic coil in optical communication with the optical modulator. A demodulator is configured to receive an optical signal from the optical coupler and convert the optical

signal to an electrical signal. A loop closure electronics module is configured to receive the electrical signal from the demodulator. A bias modulator is responsive to an output from the loop closure electronics module and is configured to output a modulation signal to the optical modulator. A first crosstalk filter network is operatively coupled to the demodulator, and a second crosstalk filter network is operatively coupled to the bias modulator.

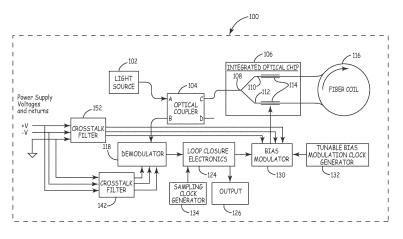


FIG. 1



#### **EUROPEAN SEARCH REPORT**

Application Number EP 10 17 6685

		ERED TO BE RELEVANT  Indication, where appropriate,	Relevant	CLASSIFICATION OF THE
Category	of relevant pass		to claim	APPLICATION (IPC)
X Y	23 June 1992 (1992-	ph 1-2 - column 12, es 1-12 * ph 5 - column 2,	2-10	INV. G01C19/72 H04B15/02
х		(HLINGER GUENTER [DE])	1	
A	27 September 1994 ( * column 1, paragra paragraph 5; figure	iph 1-3 - column 9,	2-10	
Y	12 January 1993 (19 * column 1, paragra	ph 2-6 - column 3, ms 1-33; figures 1-14 *	2-10	
A	US 5 818 705 A (FAU 6 October 1998 (199 * column 3, paragra paragraph 1; figure * column 4, paragra paragraph 3 * * column 8, paragra paragraph 3 *	08-10-06) uph 1-5 - column 4, us 1b,5 * uph 1 - column 7,	2-10	TECHNICAL FIELDS SEARCHED (IPC)  G01C H04B
A	EP 1 519 472 A1 (OL 30 March 2005 (2005 * paragraphs [0014] [0074] - [0115]; fi * abstract *	5-03-30) - [0073] - paragraphs	2-10	
	The present search report has	been drawn up for all claims		
	Place of search	Date of completion of the search		Examiner
	The Hague	24 April 2015	Dr	agomir, Adrian
X : parti Y : parti docu A : tech O : non	ATEGORY OF CITED DOCUMENTS icularly relevant if taken alone icularly relevant if combined with anot iment of the same category inological background written disclosure mediate document	L : document cited for	eument, but puble e n the application or other reasons	lished on, or



5

#### **EUROPEAN SEARCH REPORT**

Application Number EP 10 17 6685

**DOCUMENTS CONSIDERED TO BE RELEVANT** Citation of document with indication, where appropriate, Relevant to claim CLASSIFICATION OF THE APPLICATION (IPC) Category of relevant passages 10 US 2008/080106 A1 (MIRAFZAL BEHROOZ [US] 2-10 Α ET AL) 3 April 2008 (2008-04-03)
\* paragraphs [0012] - [0020]; figure 1 \* US 2007/081289 A1 (PIERCE JASON [US] ET AL) 12 April 2007 (2007-04-12) \* paragraphs [0004] - [0008]; figures 1,3 2-10 Α 15 US 2007/159860 A1 (HAEBERLE NORBERT [CH] ET AL HAEBERLE NORBERT [CH] ET AL) Α 2-10 20 12 July 2007 (2007-07-12)

\* paragraphs [0003] - [0031] - paragraphs [0067] - [0078] \* 25 TECHNICAL FIELDS SEARCHED (IPC) 30 35 40 45 The present search report has been drawn up for all claims 3 Place of search Date of completion of the search Examiner 50 24 April 2015 Dragomir, Adrian The Hague T: theory or principle underlying the invention
E: earlier patent document, but published on, or after the filing date
D: document cited in the application CATEGORY OF CITED DOCUMENTS 1503 03.82 particularly relevant if taken alone particularly relevant if combined with another document of the same category L: document cited for other reasons A : technological background
O : non-written disclosure
P : intermediate document & : member of the same patent family, corresponding 55

#### ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 10 17 6685

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

24-04-2015

10	)

10		
15		
20		
25		
30		
35		
40		
45		

50

55

cite	Patent document ed in search report		Publication date		Patent family member(s)		Publicatio date
US	5123741	A	23-06-1992	CA DE EP JP JP US	2026962 59001619 0441998 2514474 H0587580 5123741	D1 A1 B2 A	01-08-1 08-07-1 21-08-1 10-07-1 06-04-1 23-06-1
US	5351123	A	27-09-1994	CA DE EP JP JP US	2072208 59201728 0551537 2510460 H05272982 5351123	D1 A1 B2 A	14-07-1 27-04-1 21-07-1 26-06-1 22-10-1 27-09-1
US	5179362	Α	12-01-1993	NONE			
US	5818705	Α	06-10-1998	US US	5636112 5818705		03-06-1 06-10-1
EP	1519472	A1	30-03-2005	EP JP US	1519472 2005102750 2005068011	Α	30-03-2 21-04-2 31-03-2
US	2008080106	A1	03-04-2008	NONE			
US	2007081289	A1	12-04-2007	NONE			
US	2007159860	A1	12-07-2007	EP EP US WO	1619768 1774652 2007159860 2006008322	A2 A1	25-01-2 18-04-2 12-07-2 26-01-2